



UNITED STATES PATENT AND TRADEMARK OFFICE

UNITED STATES DEPARTMENT OF COMMERCE
United States Patent and Trademark Office
Address: COMMISSIONER FOR PATENTS
P.O. Box 1450
Alexandria, Virginia 22313-1450
www.uspto.gov

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/188,241	11/09/1998	WENZHE LUO	LUO-4	4099

7590 06/29/2004

FARKAS AND MANELLI
SEVENTH FLOOR
2000 M STREET N W
WASHINGTON, DC 200363307

EXAMINER

ENGLUND, TERRY LEE

ART UNIT	PAPER NUMBER
----------	--------------

2816

DATE MAILED: 06/29/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

09/188,241

Applicant(s)

LUO, WENZHE

Examiner

Terry L Englund

Art Unit

2816

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 03 May 2004.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-9, 11-14, 18, 19, 21 and 22 is/are pending in the application.
- 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) 1-9, 11-13, 21 and 22 is/are allowed.
- 6) ☒ Claim(s) 14, 18 and 19 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 04 November 2002 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some * c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
 - ☐ Certified copies of the priority documents have been received in Application No. _____.
 - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|--|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Response to Petition/Amendment

The petition and amendment submitted on May 3, 2004 were reviewed and considered with the following results:

The petition, for reviving an unintentionally abandoned application, was entered and granted.

The amended claims overcame the objections of claims 2-7, 12, and 14 described in the previous Office Action. Although page 3 of the Office Action had suggested --the-- be added after "switch", the applicant caught the examiner's oversight and added the term --path-- instead. This insures each occurrence of "transistor switch" is now consistently cited as "transistor switch path" to correspond to the limitation recited within independent claim 1. Therefore, the objections of claims 2-7, 12, and 14 have now been withdrawn.

Amended claim 13 overcame the previous rejections of claims 13 and 14 under 35 U.S.C. 112, second paragraph, which have been withdrawn. However, the accuracy of claim 14 is now questionable with respect to claim 13's amended "pull-down amplifier." Therefore, claim 14 has a corresponding rejection described later under the appropriate section.

Amended claim 18 created a new concern, and claims 18 and 19 are now both rejected under 35 U.S.C. 112, second paragraph as described later.

Amended claim 18 did not overcome the rejections of claims 18-19 under 35 U.S.C. 103(a) with respect to Harston. Those rejections are described later under the appropriate section, with slight modifications to account for the amended limitation, and/or further clarify the

Art Unit: 2816

examiner's interpretations of the limitations with respect to the reference. Related comments are described later under the Response to Arguments/Comments.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 14, and 18-19 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which the applicant regards as the invention. Using the applicant's own figures as references, it is believed that if the amplifier is a "pull-down" amplifier as now recited within claim 13, then the current source must be connected between a power source and the first side of the transistor switch path. For example, Figs. 4/5 both show a "pull-down" path 450/450 coupled to current source 420/420 that is coupled to power source VDD/unlabeled, wherein it is understood the "pull-down" mirror path can comprise a "pull-down" amplifier (e.g. as shown in Fig. 5). Only Figs. 7/8 show current source 740/720 coupled to ground. However, it is coupled to "pull-up" mirror path 750/750 instead of a "pull-down" mirror path. Therefore, it is not understood why the "pull-up" mirror path of Figs. 7/8 would comprise a "pull-down" amplifier (within a "pull-down mirror path") as claim 14 appears to imply, unless "pull-down" is merely used as a label with no patentable weight. It is not clear how "a constant current flow from said current source to said load" is maintained as now recited within claim 18. For example, when the current switch is turned off, how does the load receive any current from the current source? Is the applicant implying that the pull-down mirror path provides the current, flowing from the current source, to the load when the

Art Unit: 2816

current switch is off? If this is the case, the examiner requests a clear description of how the pull-down mirror path can accomplish this. Claim 19 carries over the rejection from claim 18.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

In so far as being understood, claims 18-19 remain rejected under 35 U.S.C. 103(a) as being unpatentable over Harston. The circuit shown in Harston's Fig. 3 is understood by one of ordinary skill in the art as providing one type of method for reducing charge injection from a current source through a current switch into a load. MOS transistor MP1, with its gate coupled to bias voltage BIAS, is known to be a constant current source providing its given current level (controlled by the level of BIAS) to one of a pull-down mirror path MP3 and a current switch MP2 that are in parallel with one another (e.g. their upper terminals share a common connection between MP1 and MP2, and their lower terminals are both coupled to ground, at least indirectly). Current switch MP2 and pull-down mirror path MP3 operate complementary to one another (see their respective control signal DATAB and DATA) during normal operation of the circuit. Due to these complementary control signals, switch MP3 (in pull-down mirror path MP3) will be turned on when current switch MP2 is turned off, and vice versa. For this reason, MP3 can be deemed a pull-down mirror path as it performs an opposite function of MP2, and allows the current from current source MP1 to flow to ground when path MP3 is conducting. Therefore, one of ordinary skill in the art would realize the constant/given current of current source MP1

Art Unit: 2816

would continuously flow out of current source MP1 to which one of the current switch MP2 and pull-down mirror path MP3 is conducting at the time. Such a constant current flow from the current source would obviously reduce charge injection flowing to load $37.5\Omega, 10\text{pF}$ during the switching of the current flow between the load (due to current switch MP2) and the pull-down mirror path, thus rendering claim 18 obvious. Another way of viewing this current flow is the load will constantly receive the current flowing from current source MP1 as long as current switch MP2 is conducting, and pull-down mirror path MP3 is not conducting. With a constant current always flowing through current source MP1, one of ordinary skill in the art would know no gate charge would build up with respect to current source MP1. This will help prevent any fast voltage transitions (e.g. see column 2, lines 9-13), which is understood to relate to one type of means for reducing charge injection. Since current source MP1 is shown (and described – see column 2, lines 60) as a PMOS transistor, claim 19 is also rendered obvious.

Claims 10, 15-17, and 20 had been previously canceled.

Allowable Subject Matter

Claims 1-9, 11-13, 21, and 22 are allowed. There is no motivation to modify or combine any prior art reference(s) to ensure the pull-down mirror path comprises a switch and an amplifier as recited within claim 1, upon which claims 2-9, and 11-13 depend. For similar reasons, it is understood that the pull-down mirror path in both claims 21 and 22 also comprises both a switch and an amplifier. For example, see “a switch in a pull-down mirror path, comprising an amplifier” in claim 21 (lines 5-6), and “a switch in a pull-down mirror path” and “said pull-down mirror path comprising an amplifier” as recited in respective lines 5 and 8-9 of

Art Unit: 2816

claim 22. These limitations correspond to the pull-down mirror path 450, switch MT, and amplifier 400 shown in the applicant's Fig. 5.

Also, claim 14 could be allowable if rewritten to satisfactorily overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims. Claim 14 depends on allowed claim 13.

Response to Arguments

The applicant's arguments filed May 3, 2004 have been fully considered but they are not persuasive with respect to claims 18-19. The applicant argues that Harston does not teach or suggest the pull-down mirror path and current switch "ensure a constant current flow from the current source to the load" as described on the amendment's page 9.

Even though the applicant's arguments were not found persuasive, these arguments have also been considered moot in view of the new ground(s) of rejection. Although it is understood the current source can provide a constant current flow, it's not understood how the load can receive that constant current unless the current switch is actually on. Apparently, the applicant is implying that when the current switch is off, the pull-down mirror path still provides the current flowing from the current source to the load. However, nothing in the applicant's figures and disclosure clearly support this. From the examiner's viewpoint, the load can only receive the current source's current when the current switch is on, and when the current switch is off, the current only flows into the pull-down mirror path, wherein that path does not provide the current source's current to the load. Using the applicant's own Fig. 5 as an example, if pull-down mirror path 450 provides the current source's current I_A to the load, then it must provide a current path between the output of current source 420 and the input of load 440. If that is the case, the current

Art Unit: 2816

source's current must also flow out of the "+" input of pull-down amp 400. However, how does an amplifier's "+" input provide an output current? Therefore, the applicant is requested to clarify how the load actually receives a constant current from the current source when the current switch is off. This clarification should clearly indicate which figure(s) and section(s) of the disclosure fully support these operations.

For the reasons described above (with respect to understanding the applicant's claimed limitations, the figures, and their respective descriptions), the rejections are deemed proper.

The applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). The applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the date of this final action.

Any inquiry concerning this communication, or previous communications, from the examiner should be directed to Terry L. Englund whose telephone number is (571) 272-1743. The examiner can normally be reached Monday-Friday from 7 AM to 3 PM.

Art Unit: 2816

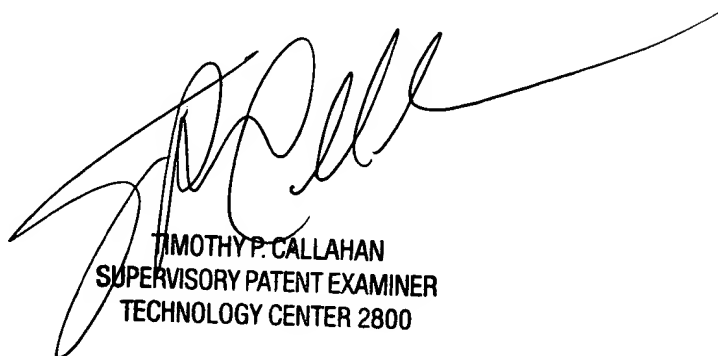
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Tim Callahan, can be reached on (571) 272-1740.

The new central official fax number is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (571) 272-1562.

Terry L. Englund

28 June 2004



TIMOTHY P. CALLAHAN
SUPERVISORY PATENT EXAMINER
TECHNOLOGY CENTER 2800